Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously presented) A pneumococcus type 5 capsular polysaccharide, wherein the polysaccharide is aminated on the terminal aldehyde group and exhibits

   (i) a carbon (^{13}C) NMR spectrum having

      (a) no resonance signal between 13 and 14 ppm inclusive;

      (b) no resonance signal between 11.5 and 12.5 ppm, inclusive; and

      (c) a resonance signal located between 17 and 18 ppm inclusive, characteristic of N-acetylated quinovosamine, the intensity of which is increased in comparison with the resonance signal located between 17 and 18 ppm, inclusive, in the (^{13}C) NMR spectrum of a pneumococcus type 5 capsular polysaccharide obtained after reductive amination in the presence of sodium cyanoborohydride at pH 8 for 48 hours;

   (ii) an HPAEC-PAD chromatogram obtained by elution from a anion-exchange column in an 18 mM sodium hydroxide solution at a flow rate of 1 ml/min for 15 min of monosaccharides derived from hydrolysis of said polysaccharide having:

      (a) no peak between fucosamine and pneumosamine peaks;

      (b) or

      (iii) both,

   and wherein the anion-exchange column consists of a support based on polystyrene and sulfonated divinylbenzene having a degree of cross-linking of 55% and latex microbeads with quaternary ammonium groups; wherein the latex microbeads have a degree of cross-linking of 5% and the diameter of 400 nm.

2. (Canceled)

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3. (Canceled)

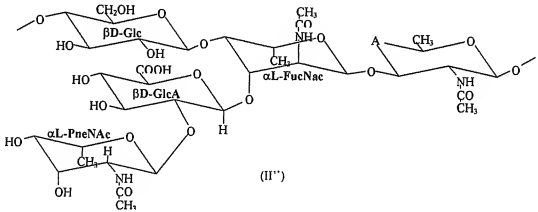
4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Currently amended) ~~The~~ A pneumococcus type 5 capsular polysaccharide which is aminated on the terminal aldehyde group, consisting of repeating units ~~according to Claim 5~~ in which at least 95% of the repeating units ~~corresponding to formula (II) correspond to~~ are of formula II"



in which A is CHOH.

9. (Canceled)

10. (Previously presented) A polysaccharide-polypeptide conjugate comprising a polysaccharide according to Claim 1 coupled to a carrier polypeptide (P).

11. (Withdrawn) A method for producing an aminated pneumococcus type 5 capsular polysaccharide, wherein the polysaccharide is subjected to a reductive amination in the presence of a reducing agent selective for a Schiff base at a pH of 4 to 6.5 for a period not exceeding 4 hours.

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12. (Withdrawn) The method according to Claim 11 in which the polysaccharide is subjected to a reductive amination at a pH of 5 to 6.

13. (Withdrawn) The method according to Claim 11 in which the polysaccharide is subjected to a reductive amination for a period not exceeding 2 hours.

14. (Withdrawn) The method according to Claim 11 in which the reducing agent selective for a Schiff base is cyanoborohydride or pyridine borane complex.

15. (Withdrawn) A method for producing an aminated pneumococcus type 5 capsular polysaccharide, according to which (i) the polysaccharide is reacted with an agent for reducing a ketone function, (ii) the reduced polysaccharide is fragmented, and (iii) the reduced and fragmented polysaccharide is subjected to a reductive amination.

16. (Withdrawn) The method according to Claim 15 in which the polysaccharide which is reacted with the agent capable of reducing a ketone function is in native form.

17. (Withdrawn) The method according to Claim 15 in which the agent capable of reducing a ketone function is $NaBH_4$.

18. (Withdrawn) The method according to Claim 15 in which the reduced polysaccharide is fragmented by oxidative free-radical depolymerization.

19. (Withdrawn) A method for producing a conjugate of formula Ps-*CH_2-NH*-P, according to which a method according to Claim 11 is used, wherein the pneumococcus type 5 capsular polysaccharide (Ps) is coupled by reductive amination to a carrier polypeptide (P) in the presence of a reducing agent selective for a Schiff base at a pH of 4 to 6.5 for a period not exceeding 4 hours.

20. (Withdrawn) A method for producing a conjugate of formula Ps-*CH_2-NH*-P, according to which a method according to Claim 15 is used, in which the reduced and fragmented pneumococcus type 5 capsular polysaccharide (Ps) is coupled by reductive amination with a carrier polypeptide (P).

21. (Withdrawn) A method for producing a conjugate of formula Ps-*CH_2-NH*-L-P, according to which:

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(i) the method according to Claim 11 is used, wherein the pneumococcus type 5 capsular polysaccharide (Ps) is coupled by reductive amination to a linking agent (L) having at least one free amine function so as to form an aminated and activated polysaccharide of formula Ps-CH_2-NH-L, and the activated polysaccharide is coupled to a carrier polypeptide (P) in order to obtain the conjugate of formula Ps-CH_2-NH-L-P; or, alternatively,

(ii) the method according to Claim 11 is used, wherein the pneumococcus type 5 capsular polysaccharide (Ps) is coupled by reductive amination to an activated carrier polypeptide of formula L-P, wherein L is a linking agent having at least one free amine function, in order to obtain the conjugate of formula Ps-CH_2-NH-L-P.

22. (Withdrawn) A method for producing a conjugate of formula Ps-CH_2-NH-L-P, in which:

(i) (a) a method according to Claim 15 is used, wherein the reduced and fragmented pneumococcus type 5 capsular polysaccharide (Ps) is coupled by reductive amination to a linking agent (L) having at least one free amine function so as to form an aminated and activated polysaccharide of formula Ps-CH_2-NH-L, and

(b) the activated polysaccharide is coupled to a carrier polypeptide (P) in order to obtain the conjugate of formula Ps-CH_2-NH-L-P; or, alternatively,

(ii) the method according to Claim 15 is used, wherein the reduced and fragmented pneumococcus type 5 capsular polysaccharide (Ps) is coupled by reductive amination to an activated carrier polypeptide of formula L-P, wherein L is a linking agent having at least one free amine function, in order to obtain the conjugate of formula Ps-CH_2-NH-L-P.

23. (Withdrawn) A method for producing a conjugate of formula Ps-CH_2-NH-S-L'-P, in which:

(i) the method according to Claim 11 is used, wherein the pneumococcus type 5 capsular polysaccharide (Ps) is coupled by reductive amination to a spacer (S) having at least one free amine function, so as to form an aminated and derivatized polysaccharide of formula Ps-CH_2-NH-S, and

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(ii) (a) the derivatized polysaccharide is coupled with a linking agent (L'), in order to obtain an activated polysaccharide of formula Ps-*CH$_2$-NH*-S-L', then the activated polysaccharide is coupled with a carrier polypeptide (P), in order to obtain the conjugate of formula Ps-*CH$_2$-NH*-S-L'-P; or, alternatively,

(b) the derivatized polysaccharide is coupled with an activated carrier polypeptide of formula L'-P, in which L' is a linking agent, in order to obtain the conjugate of formula Ps-*CH$_2$-NH*-S-L'-P.

24. (Withdrawn) A method for producing a conjugate of formula Ps-*CH$_2$-NH*-S-L'-P, in which:

(i) the method according to Claim 15 is used, wherein the reduced and fragmented pneumococcus type 5 capsular polysaccharide (Ps) is coupled by reductive amination to a spacer (S) having at least one free amine function so as to form an aminated and derivatized polysaccharide of formula Ps-*CH$_2$-NH*-S, and

(ii) (a) the derivatized polysaccharide is coupled with a linking agent (L') in order to obtain an activated polysaccharide of formula Ps-*CH$_2$-NH*-S-L', then the activated polysaccharide is coupled with a carrier polypeptide (P), in order to obtain the conjugate of formula Ps-*CH$_2$-NH*-S-L'-P; or, alternatively,

(b) the derivatized polysaccharide is coupled with an activated carrier polypeptide of formula L'-P, wherein L' is a linking agent, in order to obtain the conjugate of formula Ps-*CH$_2$-NH*-S-L'-P.

25. (Withdrawn) The method according to Claim 19, wherein the carrier polypeptide P is diphtheria toxoid or tetanus toxoid.

26. (Withdrawn) The method according to Claim 21, wherein the linking agent (L) is a compound of formula (XII) R1-A-R2, in which:

A denotes an aliphatic or aromatic chain or a mixed aliphatic and aromatic chain, which may be substituted or unsubstituted;

R1 denotes a primary amine or a chemical radical carrying a primary amine; and

R2 denotes a functional group capable of reacting with a carbonyl, thiol or amine group.

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27. (Withdrawn) The method according to Claim 26, wherein the linking agent (L) is an alkyl dihydrazide or a diaminoalkyl.

28. (Withdrawn) The method according to Claim 23, wherein the spacer S is an aminothiol and the linking agent L' is a succinimidylmaleimidylalkyl.

29. (Withdrawn) The method according to Claim 23, wherein the spacer S is a diaminoalkyl or a dihydrazide, and the linking agent L' is chosen from disuccinimidylalkyl or succinimidylmaleimidoalkyl compounds of formula (XIV) R3-B-R4 in which B is an alkyl group, R3 is a succinimidyl group and R4 is a succinimidyl or maleimido group.

30. (Original) A pharmaceutical composition comprising a conjugate according to Claim 10.

31. (Previously presented) A pharmaceutical composition comprising a conjugate obtained by reducing ketone and aldehyde functions of a pneumococcus type 5 capsular polysaccharide, fragmenting the reduced polysaccharide, and subjecting the reduced and fragmented polysaccharide to a reductive amination in the presence of a reducing agent selective for a Schiff base, wherein the pneumococcus type 5 capsular polysaccharide (Ps) is coupled by the reductive amination to a carrier polypeptide (P) to yield the conjugate.

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